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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/090,969

03/06/2002

Barry Nagle

2006.PGG

7562

7590

08/13/2004

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EXAMINER

FOX, DAVID T

ART UNIT

PAPER NUMBER

1638

DATE MAILED: 08/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/090,969

Applicant(s)

NAGLE ET AL.

Examiner

David T. Fox

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-8 and 10-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7,8,10 and 11 is/are rejected.
- 7) ☒ Claim(s) 6 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The amendments of 02 June 2004 have overcome all outstanding rejections applied to the claims as they were interpreted to read on the first elected species, namely a method of making maize plants homozygous recessive for either waxy and sugary2 and heterozygous for the other of waxy and sugary2, said method comprising crossing double homozygous mutant hybrids. Accordingly, the Examiner examined the species of a method of making maize plants homozygous/heterozygous for waxy and white endosperm comprising crossing double homozygous mutant hybrids, and found that species enabled and free of the prior art. Subsequently, the Examiner examined the species of a method of making maize plants homozygous/heterozygous for waxy and horny comprising crossing double homozygous mutant hybrids. The following rejections are applied to that third examined species.

Claims 4 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4 and 10 are indefinite for depending upon cancelled claims 3 and 9, respectively. Amending claim 4 to depend upon claim 1, and amending claim 10 to depend upon claim 7, would obviate this rejection.

Claims 1-2, 4-5, 7-8, and 10-11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for claims limited to a method for making a maize plant which is homozygous/heterozygous for waxy/sugary2

or waxy/white endosperm, does not reasonably provide enablement for claims broadly drawn to a method for making a maize plant which is homozygous/heterozygous for waxy/horny or any other combination of waxy with a second triploid trait allele. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The claims are broadly drawn to a method of making a maize plant which is homozygous/heterozygous for a triploid kernel trait, said method comprising crossing a first maize hybrid which is homozygous recessive for waxy and horny with a second maize hybrid which is homozygous dominant for either waxy or horny and homozygous recessive for the other trait, wherein the parent hybrids are planted in blocks of at least 4 rows each, and wherein seeds are harvested separately on each parent genotype. In contrast, the specification only provides guidance for producing such maize plants wherein the first triploid kernel trait is waxy and the second kernel triploid trait is sugary2 or white endosperm (see, e.g., Examples 1 and 2, page 8 of the specification). No guidance is provided regarding the method steps used to produce any other maize plant containing any other combination of traits as produced by crossing a double homozygous recessive with a single homozygous recessive/homozygous dominant parent. Furthermore, no guidance is provided for the actual obtention of said progeny plants containing the desired genotypes, or for the use of the starch produced by said plants.

The expression and transmittal of maize kernel traits is unpredictable, particularly when double homozygous recessive mutants are employed as breeding parents. Robertson et al (US 5,004,864; see column 8, lines 15-29) teach that maize pollen carrying double recessive mutations in kernel traits exhibit reduced pollen germination. Galinat (US 4,051,629; see column 1, lines 29-31) and Chang et al (US 6,218,155; see column 3, lines 43-53) teach that double homozygous recessive maize kernels exhibit reduced seed germination. Thus, the claimed use of such plants as male parents or as seed sources for desired maize plants would be unpredictable, and would produce undesirably low levels of gene transmission or plant production.

Furthermore, the effect of single or double recessive kernel traits on starch quality and quantity in maize is unpredictable. Pearlstein et al (US 5,675,064) teach that the starch produced by maize plants with single or double homozygous recessive mutants is inferior in terms of quality and quantity produced (see, e.g., column 8, lines 15-31). Chang et al (US 6,218,155) also teach this phenomenon (see, e.g., column 3, lines 43-55). In addition, Chang et al teach that starch quality and quantity can be reduced even when one or two dominant alleles are present, contrary to expectations (see, e.g., column 6, Table 1, compare "Expected Results" with "Actual Results" for endosperm genotypes *aaa/bbB* and *aaa/BBb*). Thus, one skilled in the art would not know how to use said starch of inferior quality, or how to use maize plants producing said starch of inferior quality and/or quantity.

Given the claim breadth, unpredictability, and lack of guidance as discussed above, undue experimentation would have been required by one skilled in the art to

Art Unit: 1638

develop a multitude of non-exemplified double homozygous recessive mutant maize hybrids, to cross them with a multitude of non-exemplified homozygous recessive/homozygous dominant mutant maize hybrids, to obtain sufficient levels of gene transmission or seed germination/plant production, and to evaluate the starch produced by such progeny plants for quality and quantity.

The claims are free of the prior art, given the failure of the prior art to teach or reasonably suggest the claimed method for crossing maize hybrids which carry mutations at two kernel trait loci, in either double homozygous recessive form or homozygous recessive/homozygous dominant form, wherein the maize hybrids are planted in blocks comprising four or more rows, and wherein the seeds on each parent hybrid plant are harvested separately.

Claims 6 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In addition, claims limited to waxy and white endosperm as the two kernel mutant traits to be used in the claimed method would also be deemed allowable.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David T. Fox whose telephone number is (571) 272-0795. The examiner can normally be reached on Monday through Friday from 10:30AM to 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached on (571) 272-0804. The fax phone number for this Group is (703) 872-9306.

August 10, 2004

DAVID T. FOX
PRIMARY EXAMINER
GROUP 180 1638

